Geophysical Research Abstracts, Vol. 9, 08060, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08060
© European Geosciences Union 2007

Continental vs. Oceanic Lithosphere in the Eastern Mediterranean

M. Erduran (1), B. Endrun (2) and T. Meier (2)

(1) Department of Geophysics, Karadeniz Technical University, 61080, Trabzon, Turkey (merduran@ktu.edu.tr / Fax:+90- 462 325 74 05), (2) Department of Geosciences, Ruhr-University, Universitatsstr, 150 NA3/165, D-44780 Bochum ,Germany

The properties of the African mantle lithosphere in the Eastern Mediterranean have been a matter of debate. A set of 1D S-wave velocity models is determined in order to characterize the mantle lithosphere in the area between Crete and the Middle East. For 7 paths from Cyprus to Crete, to Anatolia, and to the Middle East average phase velocity curves of the fundamental Rayleigh mode are obtained in the frequency range of about 3 to 90 mHz by a two-station method. In addition, an east-west oriented path crossing Anatolia and a path running parallel to the Dead Sea Fault are considered. Phase velocity curves are inverted for average 1D S-wave velocity models. Resolution is investigated by a Neighborhood Algorithm. Comparing the 1D models, oceanic mantle lithosphere showing S-wave velocities above 4.6 km/s can be distinguished from mantle lithosphere with low S-wave velocities. Oceanic lithosphere is found west of Cyprus. It is subducting towards northwest in the southeastern Aegean and towards northeast beneath Anatolia. To the east of Cyprus the mantle lithosphere shows low S-wave velocities. It is concluded that the Levante Basin is underlain by continental mantle lithosphere. The lithosphere-asthenosphere boundary is found at about 60 km depth beneath the Levante Basin and in the region of the Dead Sea Fault. Low S-wave velocities beneath Anatolia extend down to at least 150 km depth. Inferred Moho depths vary for the different paths between 28 km and 41 km.